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6531303	6

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L2: Entry 6 of 6

File: USPT

Mar 11, 2003

US-PAT-NO: 6531303DOCUMENT-IDENTIFIER: US 6531303 B1

TITLE: Method of producing geranylgeraniol

DATE-ISSUED: March 11, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Millis; James R.	Kohler	WI		
Maurina-Brunker; Julie	Appleton	WI		
McMullin; Thomas W.	Manitowoc	WI		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Arkion Life Sciences LLC	Wilmington	DE			02

APPL-NO: 09/350275 [PALM]

DATE FILED: July 6, 1999

PARENT-CASE:

REFERENCE TO RELATED APPLICATION This application claims priority from U.S. Provisional Application Serial No. 60/091,964, filed Jul. 6, 1998, entitled "Production of Farnesol and Geranylgeraniol."

INT-CL-ISSUED: [07] C12P 7/02, C12N 9/10, C12N 15/00, C12N 15/74, C12N 15/01

INT-CL-CURRENT:

TYPE IPC	DATE
CIPS <u>C12 N 9/10</u>	20060101
CIPS <u>C12 N 9/02</u>	20060101
CIPS <u>C07 D 311/72</u>	20060101
CIPS <u>C07 D 311/00</u>	20060101
CIPS <u>C12 P 7/02</u>	20060101
CIPS <u>C12 P 7/04</u>	20060101

US-CL-ISSUED: 435/155; 435/193, 435/254.21, 435/320.1, 435/471, 435/441

US-CL-CURRENT: 435/155; 435/193, 435/254.21, 435/320.1, 435/441, 435/471

FIELD-OF-CLASSIFICATION-SEARCH: 435/155, 435/254.21, 435/441, 435/320.1, 435/471, 435/193

See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected

Search ALL

Clear

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> <u>4871721</u>	October 1989	Biller	514/102
<input type="checkbox"/> <u>5589372</u>	December 1996	Robinson et al.	435/193
<input type="checkbox"/> <u>5766911</u>	June 1998	Koike et al.	435/193

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FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
393690	October 1990	EP	
486290	May 1992	EP	
769551	April 1997	EP	

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Wiedemann et al., 1993, Arch Biochem Biophys, 306:152-157.
Yamano et al., 1994, Biosci. Biotechnol. Biochem. 58:1112-1114.

ART-UNIT: 1652

PRIMARY-EXAMINER: Achutamurthy; Ponnathapura

ASSISTANT-EXAMINER: Walicka; Malgorzata A

ATTY-AGENT-FIRM: Ross, P.C.; Sheridan

ABSTRACT:

The invention provides a biological method of producing geranylgeraniol.

14 Claims, 24 Drawing figures

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3 1-15 bib

L3 ANSWER 1 OF 15 PCTFULL COPYRIGHT 2007 Univentio on STN
AN 2007003346 PCTFULL ED 20070116 EW 200702
TIEN FUNGICIDAL AGENTS
TIFR AGENTS FONGICIDES
IN MENDGEN, Kurt, Fischerstrasse 32, 78464 Konstanz, DE;
PIEL, Joern, Koblenzer Strasse 79, 53177 Bonn, DE;
VAHLENKAMP, Heinz, Rometstrasse 6, 78244 Gottmadingen, DE;
GIELE, Christine, Austrasse 93, 78467 Konstanz, DE;
WIRSEL, Stefan, G., R., Adolf-von-Harnack-Strasse 25, 06114 Halle, DE;
HOFFMANN, Jochen, Kapellenstrasse 5, 86368 Gersthofen, DE;
BOLAND, Wilhelm, Carl-Ortf-Strasse 21, 07743 Jena, DE;
JUX, Andreas, Grenzhoefer Weg 2, 68123 Heidelberg, DE
PA MAX-PLANCK-GESELLSCHAFT ZUR FOERDERUNG DER WISSENSCHAFTEN E.V.,
Hofgartenstrasse 8, 80539 Muenchen, DE
AG VOSSIUS & PARTNER, Siebertstrasse 4, 81675 Munich, DE
LAF English
LA English
DT Patent
PI WO 2007003346 A2 20070111
DS W: AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR
CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HN HR HU
ID IL IN IS JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU
LV LY MA MD MG MK MN MW MX MZ NA NG NI NO NZ OM PG PH PL
PT RO RS RU SC SD SE SG SK SL SM SY TJ TM TN TR TT TZ UA
UG US UZ VC VN ZA ZM ZW
RW (ARIPO): BW GH GM KE LS MW MZ NA SD SL SZ TZ UG ZM ZW
RW (EAPO): AM AZ BY KG KZ MD RU TJ TM
RW (EPO): AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LT
LU LV MC NL PL PT RO SE SI SK TR
RW (OAPI): BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
PRAI EP 2005-05014666 20050706
AI WO 2006-EP6330 A 20060629

L3 ANSWER 2 OF 15 USPATFULL on STN
AN 2004:315541 USPATFULL
TI Method of making teprenone
IN Saucy, Gabriel G., Essex Fells, NJ, UNITED STATES
PI US 2004249219 A1 20041209
AI US 2001-899418 A1 20010703 (9)
PRAI US 2000-215897P 20000705 (60)
DT Utility
FS APPLICATION
LREP SHERIDAN ROSS PC, 1560 BROADWAY, SUITE 1200, DENVER, CO, 80202
CLMN Number of Claims: 29
ECL Exemplary Claim: 1
DRWN 9 Drawing Page(s)
LN.CNT 1388
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L3 ANSWER 3 OF 15 USPATFULL on STN
AN 2004:144592 USPATFULL
TI Production of farnesol and geranylgeraniol
IN Millis, James R., Kohler, WI, UNITED STATES
Maurina-Brunker, Julie, Appleton, WI, UNITED STATES
McMullin, Thomas W., Manitowoc, WI, UNITED STATES
PA Arkion Life Sciences LLC. (U.S. corporation)
PI US 2004110257 A1 20040610
AI US 2003-719196 A1 20031120 (10)
RLI Continuation of Ser. No. US 2001-909558, filed on 20 Jul 2001, GRANTED,
Pat. No. US 6689593 Continuation of Ser. No. US 1999-350275, filed on 6
Jul 1999, GRANTED, Pat. No. US 6531303
PRAI US 1998-91964P 19980706 (60)

DT Utility
FS APPLICATION
LREP SHERIDAN ROSS PC, 1560 BROADWAY, SUITE 1200, DENVER, CO, 80202
CLMN Number of Claims: 17
ECL Exemplary Claim: 1
DRWN 11 Drawing Page(s)
LN.CNT 3450
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L3 ANSWER 4 OF 15 EPFULL COPYRIGHT 2007 EPO/FIZ KA on STN

AN 2001:105391 EPFULL
DUPD 20040331 DUPW 200414
TIEN Method for production of geranylgeraniol and analogous compounds thereof
by microorganisms.
TIFR Procédé de préparation de geranylgeraniol et de composés analogues à
l'aide de microorganismes.
TIDE Verfahren zur Herstellung von Geranylgeraniol und analogen Verbindungen
durch Mikroorganismen.
IN Muramatsu, Masayoshi, c/o TOYOTA Jidosha Kabushiki Kaisha, 1,
Toyota-cho, Toyota-shi, Aichi 471-8571, JP;
Obata, Shusei, c/o TOYOTA Jidosha Kabushiki Kaisha, 1, Toyota-cho,
Toyota-shi, Aichi 471-8571, JP;
Shimizu, Sakayu, c/o TOYOTA Jidosha Kabushiki Kaisha, 1, Toyota-cho,
Toyota-shi, Aichi 471-8571, JP
PA TOYOTA JIDOSHA KABUSHIKI KAISHA, 1, Toyota-cho, Toyota-shi, Aichi
471-8571, JP
PAN 203744
AG Leson, Thomas Johannes Alois, Dipl.-Ing., Tiedtke-Buehling-Kinne &
Partner GbR, TBK-Patent, Bavariaring 4, 80336 Muenchen, DE
AGN 78982
DT Patent
LAF English
LA English
LAP English
TL German; English; French
PIT EPA3 Separate publication of search report
PI EP 1219714 A3 20040331
DS AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
EXTENSION STATES: AL LT LV MK RO SI
AI EP 2001-130424 A 20011220
PRAI JP 2000-401266 A 20001228
JP 2001-376173 A 20011210

L3 ANSWER 5 OF 15 EPFULL COPYRIGHT 2007 EPO/FIZ KA on STN

AN 2001:105388 EPFULL UP 20050803
DUPD 20050803 DUPW 200531
TIEN High production method of prenyl alcohol by microorganisms.
TIFR Procédé de production élevée d'alcool prenylique par des
micro-organismes.
TIDE Verfahren mit hoher Produktionskapazität von Prenylalkohol durch
Mikroorganismen.
IN Muramatsu, Masayoshi, c/o TOYOTA Jidosha Kabushiki Kaisha, 1,
Toyota-cho, Toyota-shi, Aichi 471-8571, JP;
Obata, Shusei, c/o TOYOTA Jidosha Kabushiki Kaisha, 1, Toyota-cho,
Toyota-shi, Aichi 471-8571, JP;
Shimizu, Sakayu, c/o TOYOTA Jidosha Kabushiki Kaisha, 1, Toyota-cho,
Toyota-shi, Aichi 471-8571, JP
PA TOYOTA JIDOSHA KABUSHIKI KAISHA, 1, Toyota-cho, Toyota-shi, Aichi
471-8571, JP
PAN 203744
AG Leson, Thomas Johannes Alois, Dipl.-Ing., Tiedtke-Buehling-Kinne &
Partner GbR, TBK-Patent, Bavariaring 4, 80336 Muenchen, DE

AGN 78982
DT Patent
LAF English
LA English
LAP English
TL German; English; French
PIT EPB1 Granted patent
PI EP 1219704 B1 20040811
DS DE FR GB
AI EP 2001-130425 A 20011220
PRAI JP 2000-401951 A 20001228
JP 2001-375842 A 20011210
REN CHAMBON C ET AL: "ISOLATION AND PROPERTIES OF YEAST MUTANTS AFFECTED IN FARNESYL DIPHOSPHATE SYNTHETASE" CURRENT GENETICS, NEW YORK, NY, US, vol. 18, 1990, pages 41-46, XP002909498 ISSN: 0172-8083
REP WO 2000001650 A

L3 ANSWER 6 OF 15 USPATFULL on STN
AN 2003:181739 USPATFULL
TI Method of vitamin production
IN Millis, James R., Kohler, WI, UNITED STATES
Saucy, Gabriel G., Essex Fells, NY, UNITED STATES
Maurina-Brunker, Julie, Appleton, WI, UNITED STATES
McMullin, Thomas W., Manitowoc, WI, UNITED STATES
PA DCV, Inc., d/b/a Bio-Technical Resources (U.S. corporation)
PI US 2003125573 A1 20030703
AI US 2001-902187 A1 20010709 (9)
RLI Continuation of Ser. No. US 1999-348097, filed on 6 Jul 1999, PENDING
PRAI US 1998-91868P 19980706 (60)
US 1998-91983P 19980706 (60)
DT Utility
FS APPLICATION
LREP SHERIDAN ROSS PC, 1560 BROADWAY, SUITE 1200, DENVER, CO, 80202
CLMN Number of Claims: 92
ECL Exemplary Claim: 1
DRWN 12 Drawing Page(s)
LN.CNT 4091
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L3 ANSWER 7 OF 15 USPATFULL on STN
AN 2003:140544 USPATFULL
TI High production method of prenol alcohol by microorganisms
IN Muramatsu, Masayoshi, Nishikamo-gun, JAPAN
Obata, Shusei, Nagoya-shi, JAPAN
Shimizu, Sakayu, Kyoto-shi, JAPAN
PI US 2003096385 A1 20030522
US 6974685 B2 20051213
AI US 2001-22434 A1 20011220 (10)
PRAI JP 2000-401951 20001228
JP 2001-375842 20011210
DT Utility
FS APPLICATION
LREP KENYON & KENYON, 1025 Connecticut Avenue, N.W., Washington, DC, 20036-5405
CLMN Number of Claims: 3
ECL Exemplary Claim: 1
DRWN 11 Drawing Page(s)
LN.CNT 2296
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L3 ANSWER 8 OF 15 USPATFULL on STN
AN 2003:134059 USPATFULL
TI Production of farnesol and geranylgeraniol
IN Millis, James R., Kohler, WI, UNITED STATES

Maurina-Brunker, Julie, Appleton, WI, UNITED STATES
McMullin, Thomas W., Manitowoc, WI, UNITED STATES
PA DCV, Inc. d/b/a Bio-Technical Resources. (U.S. corporation)
PI US 2003092144 A1 20030515
US 6689593 B2 20040210
AI US 2001-909558 A1 20010720 (9)
RLI Continuation of Ser. No. US 1999-350275, filed on 6 Jul 1999, PENDING
PRAI US 1998-91964P 19980706 (60)
DT Utility
FS APPLICATION
LREP SHERIDAN ROSS PC, 1560 BROADWAY, SUITE 1200, DENVER, CO, 80202
CLMN Number of Claims: 70
ECL Exemplary Claim: 1
DRWN 8 Drawing Page(s)
LN.CNT 3644
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L3 ANSWER 9 OF 15 USPATFULL on STN
AN 2003:67669 USPATFULL
TI Method of producing geranylgeraniol
IN Millis, James R., Kohler, WI, United States
Maurina-Brunker, Julie, Appleton, WI, United States
McMullin, Thomas W., Manitowoc, WI, United States
PA Arkion Life Sciences LLC, Wilmington, DE, United States (U.S. corporation)
PI US 6531303 B1 20030311
AI US 1999-350275 19990706 (9)
PRAI US 1998-91964P 19980706 (60)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Achutamurthy, Ponnathapura; Assistant Examiner: Walicka, Malgorzata A
LREP Ross, P.C., Sheridan
CLMN Number of Claims: 14
ECL Exemplary Claim: 1
DRWN 24 Drawing Figure(s); 24 Drawing Page(s)
LN.CNT 3324
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L3 ANSWER 10 OF 15 USPATFULL on STN
AN 2002:329852 USPATFULL
TI Method for production of geranylgeraniol and analogous compounds thereof by microorganisms
IN Muramatsu, Masayoshi, Nishikamo-gun, JAPAN
Obata, Shusei, Nagoya-shi, JAPAN
Shimizu, Sakayu, Kyoto-shi, JAPAN
PI US 2002187532 A1 20021212
US 6972191 B2 20051206
AI US 2001-22695 A1 20011220 (10)
PRAI JP 2000-401266 20001228
JP 2001-376173 20011210
DT Utility
FS APPLICATION
LREP KENYON & KENYON, 1500 K STREET, N.W., SUITE 700, WASHINGTON, DC, 20005
CLMN Number of Claims: 2
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 1676
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L3 ANSWER 11 OF 15 USPATFULL on STN
AN 2002:152810 USPATFULL
TI Method of vitamin production
IN Millis, James R., Kohler, WI, United States

Saucy, Gabriel G., Essex Fells, NJ, United States
Maurina-Brunker, Julie, Appleton, WI, United States
McMullin, Thomas W., Manitowoc, WI, United States
PA DCV, Inc., Manitowoc, WI, United States (U.S. corporation)
PI US 6410755 B1 20020625
AI US 1999-348097 19990706 (9)
PRAI US 1998-91868P 19980706 (60)
US 1998-91983P 19980706 (60)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Solola, T. A.
LREP Sheridan Ross P.C.
CLMN Number of Claims: 20
ECL Exemplary Claim: 1
DRWN 17 Drawing Figure(s); 17 Drawing Page(s)
LN.CNT 3756
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L3 ANSWER 12 OF 15 PCTFULL COPYRIGHT 2007 Univentio on STN
AN 2002003981 PCTFULL ED 20020814
TIEN METHOD OF MAKING TEPRENONE
TIFR PROCEDE DE FABRICATION DE TEPRENONE
IN SAUCY, Gabriel, G.;
COHEN, Noel
PA DCV, INC. D/B/A BIO-TECHNICAL RESOURCES
DT Patent
PI WO 2002003981 A1 20020117
DS W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU
CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN
IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN
MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT
TZ UA UG UZ VN YU ZA ZW GH GM KE LS MW MZ SD SL SZ TZ UG
ZW AM AZ BY KG KZ MD RU TJ TM AT BE CH CY DE DK ES FI FR
GB GR IE IT LU MC NL PT SE TR BF BJ CF CG CI CM GA GN GW
ML MR NE SN TD TG
PRAI US 2000-60/215,897 20000705
AI WO 2001-US21398 A 20010705

L3 ANSWER 13 OF 15 USPATFULL on STN
AN 2001:82552 USPATFULL
TI Method of vitamin production
IN Millis, James R., Kohler, WI, United States
Saucy, Gabriel G., Essex Fells, NJ, United States
Maurina-Brunker, Julie, Appleton, WI, United States
McMullin, Thomas W., Manitowoc, WI, United States
Hyatt, John A., Kingsport, TN, United States
PA DCV, Inc., Wilmington, DE, United States (U.S. corporation)
Eastman Chemical Company, Kingsport, TN, United States (U.S. corporation)
PI US 6242227 B1 20010605
AI US 1999-352654 19990706 (9)
PRAI US 1998-91868P 19980706 (60)
DT Utility
FS Granted
EXNAM Primary Examiner: Achutamurthy, Ponnathapu; Assistant Examiner: Kerr, Kathleen
LREP Sheridan Ross P.C.
CLMN Number of Claims: 29
ECL Exemplary Claim: 1
DRWN 18 Drawing Figure(s); 18 Drawing Page(s)
LN.CNT 3840
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L3 ANSWER 14 OF 15 PCTFULL COPYRIGHT 2007 Univentio on STN

AN 2000001650 PCTFULL ED 20020515
 TIEN METHOD OF VITAMIN PRODUCTION
 TIFR PROCEDE DE PRODUCTION DE VITAMINES
 IN MILLIS, James, R.;
 SAUCY, Gabriel, G.;
 MAURINA-BRUNKER, Julie;
 McMULLIN, Thomas, W.
 PA DCV, INC. doing business as BIO-TECHNICAL RESOURCES
 LA English
 DT Patent
 PI WO 2000001650 A1 20000113
 DS W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE
 ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ
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 SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZA ZW GH GM
 KE LS MW SD SL SZ UG ZW AM AZ BY KG KZ MD RU TJ TM AT BE
 CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF
 CG CI CM GA GN GW ML MR NE SN TD TG
 PRAI US 1998-60/091,983 19980706
 US 1998-60/091,951 19980706
 US 1998-60/091,964 19980706
 AI WO 1999-US15264 A 19990706
 L3 ANSWER 15 OF 15 PCTFULL COPYRIGHT 2007 Univentio on STN
 AN 2000001649 PCTFULL ED 20020515
 TIEN METHOD OF VITAMIN PRODUCTION
 TIFR PROCEDE DE PRODUCTION DE VITAMINES
 IN MILLIS, James, R.;
 SAUCY, Gabriel, G.;
 MAURINA-BRUNKER, Julie;
 MCMULLIN, Thomas, W.;
 HYATT, John, A.
 PA DCV, INC. doing business as BIO-TECHNICAL RESOURCES;
 EASTMAN CHEMICAL COMPANY
 LA English
 DT Patent
 PI WO 2000001649 A1 20000113
 DS W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE
 ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ
 LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU
 SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZA ZW GH GM
 KE LS MW SD SL SZ UG ZW AM AZ BY KG KZ MD RU TJ TM AT BE
 CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF
 CG CI CM GA GN GW ML MR NE SN TD TG
 PRAI US 1998-60/091,868 19980706
 AI WO 1999-US15262 A 19990706

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